Mathematics Curriculum Overview: Grades 5-8

The Massachusetts Curriculum Framework for Mathematics forms the basis of mathematics study at Sherwood and Oak Middle Schools in Shrewsbury, MA. That document describes the mathematics content and practices for grades Pre-K through 12. In Shrewsbury, grade 5 students and teachers, like those in grades K-4, utilize the resource, *Math in Focus*, while grades 6-8 students and teachers utilize the resource, *Connected Math Project 3 (CMP3)*, to support teaching and learning. Below is a list of the Standards for Mathematical Practice and the Standards for Mathematical Content, as well as the report card standards for grades 5-8.

Massachusetts Curriculum Framework for Mathematics: 2011
http://www.doe.mass.edu/frameworks/math/0311.pdf

Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Grade 5 Content Standards Overview

Operations and Algebraic Thinking
Write and interpret numerical expressions.
Analyze patterns and relationships.

Number and Operations in Base Ten
Understand the place value system.
Perform operations with multi-digit whole numbers and with decimals to hundredths.

Number and Operations—Fractions
Use equivalent fractions as a strategy to add and subtract fractions.
Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

The Number System
Gain familiarity with concepts of positive and negative integers.

Measurement and Data
Convert like measurement units within a given measurement system.
Represent and interpret data.
Geometric measurement: Understand concepts of volume and relate volume to multiplication and to addition.

Geometry
Graph points on the coordinate plane to solve real-world and mathematical problems.
Classify two-dimensional figures into categories based on their properties.

Sherwood Middle School Grade 5 Report Card Standards

Reads, writes, rounds, and compares whole numbers in various forms.
Reads, writes, rounds, and compares decimals in various forms.
Solves problems using place value patterns, models, and multiplication with whole numbers.
Solves problems using place value patterns, models, and division with whole numbers.
Solves problems using models and addition and subtraction with fractions.
Solves problems using models and multiplication and division with fractions.
Solves problems using place value patterns, models, and multiplication and division with decimals.
Represents volume concepts and solves problems involving volume of right rectangular prisms.

Grade 6 Content Standards Overview

Ratios and Proportional Relationships
Understand ratio concepts and use ratio reasoning to solve problems.

The Number System
Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
Compute fluently with multi-digit numbers and find common factors and multiples.
Apply and extend previous understandings of numbers to the system of rational numbers.

Expressions and Equations
Apply and extend previous understandings of arithmetic to algebraic expressions.
Reason about and solve one-variable equations and inequalities.
Represent and analyze quantitative relationships between dependent and independent variables.

Geometry
Solve real-world and mathematical problems involving area, surface area, and volume.

Statistics and Probability
Develop understanding of statistical variability.
Summarize and describe distributions.

Sherwood Middle School Grade 6 Report Card Standards

Applies relationships between factors and multiples, and evaluates expressions to solve problems.
Solves problems using fractions, decimals, and ratios to measure and compare quantities.
Solves problems using estimation and arithmetic operations with fractions.
Solves problems using estimation and arithmetic operations with decimals and percents.
Represents and analyzes one-variable equations and inequalities.
Solves problems involving area, surface area, and volume.
Represents, describes, and analyzes data distributions.

Grade 7 Content Standards Overview

Ratios and Proportional Relationships
Analyze proportional relationships and use them to solve real-world and mathematical problems.

The Number System
Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

Expressions and Equations
Use properties of operations to generate equivalent expressions.
Solve real-world and mathematical problems using numerical and algebraic expressions and equations.

Geometry
Draw, construct and describe geometrical figures and describe the relationships between them.
Solve real-world and mathematical problems involving angle measure, area, surface area, and volume.

Statistics and Probability
Use random sampling to draw inferences about a population.
Draw informal comparative inferences about two populations.
Investigate chance processes and develop, use, and evaluate probability models.

Oak Middle School Grade 7 Report Card Standards

Solves problems in both mathematical and everyday contexts.
Communicates mathematical thinking clearly and concisely.
Applies understanding of the number system to rational numbers.
Uses scale factors, unit rates, and proportional reasoning to compare quantities and describe relationships.
Uses tables, graphs, and equations to solve problems.
Evaluates probability models and makes inferences based on data.
Analyzes the properties of two- and three-dimensional figures.

Grade 8 Content Standards Overview

The Number System
Know that there are numbers that are not rational, and approximate them by rational numbers.

Expressions and Equations
Work with radicals and integer exponents.
Understand the connections between proportional relationships, lines, and linear equations.
Analyze and solve linear equations and pairs of simultaneous linear equations.

Functions
Define, evaluate, and compare functions.
Use functions to model relationships between quantities.

Geometry
Understand congruence and similarity using physical models, transparencies, or geometry software.
Understand and apply the Pythagorean Theorem.
Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.

Statistics and Probability
Investigate patterns of association in bivariate data.

Oak Middle School Grade 8 Report Card Standards

Solves problems in both mathematical and everyday contexts.
Communicates mathematical thinking clearly and concisely.
Solves equations and evaluates expressions including those involving grouping symbols.
Represents linear functions using tables, graphs, equations and scenarios.
Understands and applies the properties of exponents to recognize/generate equivalent expressions.
Understands and applies the Pythagorean Theorem.
Understands transformations, congruence and similarity of two-dimensional figures.
Analyzes and solves systems of linear equations.
Analyzes data using two-way tables and scatterplots.
Recognizes and writes expressions for nonlinear patterns.

Report Card Performance Levels

Advanced (4)	Proficient (3)	Needs Improvement (2)	Warning (1)
Demonstrates a comprehensive and in-depth understanding of rigorous subject matter.	Demonstrates a solid understanding of challenging subject matter.	Demonstrates a partial understanding of subject matter.	Demonstrates a minimal understanding of subject matter.
Provides sophisticated solutions to complex problems.	Solves a wide variety of problems.	Solves some simple problems.	Does not solve simple problems.